SECTION TABLE OF CONTENTS

DIVISION 02 - SITE WORK

SECTION 02325

DREDGING

-- End of Section Table of Contents --

SECTION 02325

DREDGING

PART 1 GENERAL

1.1 SCOPE

The work covered by this section consists of furnishing all labor, materials, and equipment, and performing all excavation and disposal of all material as specified herein or indicated on the drawings. This scope also includes all necessary measures for protection of the environment. Environmental protection requirements under this contract are as important to overall completion of the work as other technical aspects. Failure to meet the requirements of these specifications for environmental protection may result in work stoppages or termination for default. No part of the time lost due to any such work stoppages shall be made the subject of claims for extensions of time or for excess costs or damages by the Contractor. If the Contractor fails or refuses to promptly repair any damage caused by violation of the provisions of these specifications, the Contracting Officer may have the necessary work performed and charge the cost thereof to the Contractor.

1.2 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by basic designation only.

ENGINEERING MANUALS (EM)

EM 1110-1-1000	(1993) Photogrammetric Mapping
EM 1110-1-1002	(1990) Survey Markers and Monumentation
EM 1110-1-1003	(1996) NAVSTAR Global Positioning System Surveying
EM 1110-1-1004	(1994) Deformation Monitoring and Control Surveying
EM 1110-1-1005	(1994) Topographic Surveying
EM 1110-1-2909	(1998; Chg 2) Geospatial Data and Systems
EM 1110-2-1003	(1994) Hydrographic Surveying

FLORIDA BOARD OF PROFESSIONAL SURVEYORS AND MAPPERS (FBPSM)

FBPSM	Minimum Technical Standards, Chapters 177, 472, 61G17

TRI-SERVICE STANDARDS (TSS)

TSS	(1999) A/E/C CADD Standards

1.3 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for information only. When used, a designation following the "G" designation identifies the office that will review the submittal for the Government. The following shall be submitted in accordance with Section 01330 SUBMITTAL PROCEDURES:

SD-01 Preconstruction Submittals

Vibration Control Plan (Beach Disposal Areas B and C); G|ED

After the Notice to Proceed, the Contractor shall submit a Vibration Control Plan. Approval of the Plan will not relieve the Contractor of his responsibility to document pre-existing conditions and to avoid damaging existing structures whether or not the structure(s) was determined to be susceptible to vibration damage; this includes but is not limited to damages as a result of equipment impact and/or vibration induced damages. The Vibration Control Plan shall include, but not be limited to, the following:

a. Name of Vibration Control Specialist and alternate.

b. List of structures that are susceptible to vibration damage.

c. Number of monitors (seismographs) required for the project, monitor locations, and the number of monitors that will operate simultaneously during the project.

d. Calibration data for each seismograph that will be used on the project. Calibrations shall be current, not older than one year, and follow the manufacturer's recommended procedures.

e. List of methods and procedures to reduce ground vibrations induced by construction activities to below the pre-determined maximum allowable vibration level for the designated vibration sensitive structure; i.e., reducing equipment speed, changing fill placement method, reducing equipment size, and using manual labor.

f. Plan for each work area showing the proposed construction equipment in the area, the description of susceptible structure(s) in the work area, monitors in the work area, and the list of methods and procedures in subparagraph e. above.

g. The minimum safe working distance that vibration producing equipment may operate from each vibration sensitive structure.

h. The maximum allowable ground vibration level that is permissible without causing threshold damage to each vibration sensitive structure(s).

i. The Pre-Construction Survey for vibration control monitoring.

Qualifications for Structural Inspection/Evaluation and Vibration Monitoring Personnel; G|ED

Within two weeks of the Notice of Award, the Contractor shall furnish to the Contracting Officer, for approval, qualifications of all personnel

required to perform all structural inspection and vibration monitoring to be performed during the life of this contract.

Notice of Intent to Dredge

Prior to commencement of work on this contract, the Contractor shall notify the Commander, Seventh Coast Guard District of his intended operations to dredge and request that it be published in the Local Notice to Mariners. This notification must be given in sufficient time so that it appears in the Notice to Mariners at least two weeks prior to the commencement of this dredging operation. A copy of the notification shall be provided to the COR.

Relocation of Navigation Aids

The Contractor shall not remove, change the location of, obstruct, willfully damage, make fast to, or interfere with any aid to navigation. The Contractor shall notify the Commander, Seventh Coast Guard District, Miami, Florida, in writing, with a copy to the Contracting Officer, 30 days in advance of the time he plans to dredge adjacent to any aids which require relocation to facilitate dredging. The Contractor shall contact the U.S. Coast Guard for information concerning the position to which the aids will be relocated. A copy of the notification shall be provided to the COR.

SD-07 Certificates

Electronic Tracking System Data

The Contractor shall furnish required discs, CD-ROM, and charts to the Contracting Officer.

Equipment and Performance Data

The Contractor shall furnish proof of electronic positioning equipment calibration to the Contracting Officer.

Monitoring Report (Beach Disposal Areas B and C)

The Contractor's Vibration Control Specialist shall submit a written vibration monitoring report (every two weeks) to the Contracting Officer which details the daily activities of the vibration monitoring program. This report shall include, but not be limited to, location of monitoring equipment; instrument serial number; date and times of readings; magnitude of vibration levels; a sketch for each monitoring station showing the relationship of the monitor to vibration sensitive structures; daily instrument logs - as defined below; instructions transmitted to the Contractor's personnel regarding the modification or stoppage of work operations to keep vibrations below the allowable levels; and, any other information pertinent to the vibration monitoring program.

Monitoring Location Set-Up (Beach Disposal Areas B and C)

Submit (every two weeks) photograph (3" x 5") and sketch of each monitoring location after equipment is installed. Show general location of the monitoring site on the sketch.

Daily Instrument Logs (Beach Disposal Areas B and C)

Submit (every two weeks) daily instrument logs to document satisfactory performance of the equipment during monitoring periods. Document strip charts daily with monitoring station number, date, operator signature, and instrument serial number.

Post-Construction Structural Survey (Disposal Areas B and C)

Submit two copies of the post-construction survey report within two weeks after completion of the inspection.

Notification of Discovery of Historical Period Shipwreck Sites

The Contractor shall immediately notify the Contracting Officer if any shipwreck, artifact, or other objects of antiquity that have scientific or historical value, or are of interest to the public, are discovered, located, and/or recovered.

Notice of Need for Dredging Survey

The Contractor shall give 10 days advance notice, in writing, to the Contracting Officer of the need for a pre-dredging survey or after-dredging survey for final acceptance for each acceptance section.

Daily/Monthly Report of Operations

The Contractor shall prepare and submit two (2) copies of the Daily Report of Operations, using ENG Form No. 27A and/or ENG Form No. 4267, for each dredge and/or unloader working. This report shall be submitted on a daily basis and not in groups (groups = multi-days reports packaged together at one time) except as noted in subparagraph a. below. A copy of these forms are appended to the end of this Section. In addition to the daily report, the Contractor shall prepare a Monthly Report of Operations for each month or partial month's work on ENG Form No. 27A and/or ENG Form No. 4267. The monthly report shall be submitted on or before the 7th of each month, consolidating the previous month's work. Upon completion of the job, the Contractor shall submit a consolidated job report, combining the monthly reports. The Contractor shall distribute one copy of each report to the District Engineer; ATTN: CESAJ-EN-C; U.S. Army Engineer District, Jacksonville, P.O. Box 4970; Jacksonville, Florida 32232-0019. Reports shall be submitted on a monthly basis with daily reports accompanying the monthly report and job report.

Additionally, one copy of these shall be maintained by the Contractor on the dredge(s) for the Contracting Officer's inspection purpose. Further instructions on the preparation of the reports will be furnished at the Preconstruction Conference.

Notice of Misplaced Material

The Contractor shall notify the U.S. Coast Guard Marine Safety Office of any misplaced material as stated in the Clause OBSTRUCTION OF NAVIGABLE WATERWAYS of Section 00700 CONTRACT CLAUSES.

Qualifications

The Contractor shall furnish to the Contracting Officer credentials of personnel qualified to make sound pressure measurements. (Refer to paragraph NOISE CONTROL below.)

1.4 DREDGING RESTRICTIONS

1.4.1 Order of Work

There is no specific order of work for this project except that the areas to be dredged with disposal in D/A-1 Cell A (exclusive of those areas indicated in Bar Cut-3 and Cut-7) shall be the last order of work. The dredging performed by all dredges shall be continuous within reaches approved by the Contracting Officer.

1.4.2 Hopper Restriction

The use of hopper dredges between Station 0+00, Bar Cut-3 through Station 7+21.45, Cut-16 is prohibited from 01 April through 14 December.

1.4.3 Transportation of Material

Water and dredge material shall not be permitted to overflow or spill out of barges or hopper dredges during transport to the disposal site.

1.5 PUMPING OF BILGES

Contractors are warned that pumping oil or bilge water containing oil into navigable waters, or into areas which would permit the oil to flow into such waters, is prohibited by Section 13 of the River and Harbor Act of 1899, approved 3 March 1899 (30 Stat. 1152; 33 U.S.C. 407). Violation of this prohibition is subject to the penalties under the referenced Acts.

1.6 HISTORICAL PERIOD SHIPWRECK SITES

If any shipwreck, artifact, or other objects of antiquity that have scientific or historical value, or are of interest to the public, are discovered, located, and/or recovered, the Contractor acknowledges that:

a. The site(s), articles, or other materials are the property of the State of Florida, with title vested in the Department of State, Division of Historical Resource; and that,

b. He will immediately notify the Contracting Officer.

1.7 UTILITY CROSSINGS

It is the Contractor's responsibility to investigate the location of all utility crossings. The Contractor shall take precautions against damages which might result from his operations in the vicinity of the utility crossings. If any damage occurs as a result of his operations, the Contractor will be required to suspend dredging until the damage is repaired and approved by the Contracting Officer. Costs of such repairs and down time of the dredge and attendant plant shall be at the Contractor's expense.

1.8 PERMITS

The Contractor's attention is directed to the Clause PERMITS AND RESPONSIBILITIES of Section 00700 CONTRACT CLAUSES and the paragraph PERMITS AND AUTHORIZATIONS of Section 01355 ENVIRONMENTAL PROTECTION.

1.9 FINAL CLEANUP

Final cleanup, as stated in the paragraph COMMENCEMENT, PROSECUTION, AND COMPLETION OF WORK of Section 00800 SPECIAL CONTRACT REQUIREMENTS, shall include the removal of all the Contractor's plant and equipment either for disposal or reuse. Plant and/or equipment and/or materials to be disposed of shall ONLY be disposed in a manner and at locations approved by the Contracting Officer. Unless otherwise approved by the Contracting Officer, the Contractor will not be permitted to abandon any equipment in the disposal area or other areas adjacent to the worksite.

a. Failure to promptly remove all plant, pipeline, equipment, and materials upon completion of the dredging will be considered a delay in the completion of the final cleanup and demobilization work. In such case, the Government will exercise its right as stated in Clause DEFAULT (FIXED-PRICE CONSTRUCTION) of Section 00700 CONTRACT CLAUSES to remove any plant and/or equipment and/or materials at the Contractor's expense.

1.10 WORK VIOLATIONS

Work done in violation of these specifications or a verbal or written stop order of the Contracting Officer will be considered as unsatisfactory progress for purposes of progress payments in accordance with Clause PAYMENTS UNDER FIXED-PRICE CONSTRUCTION CONTRACTS of Section 00700 CONTRACT CLAUSES.

PART 2 PRODUCTS

2.1 CHARACTER OF MATERIALS

The current dredging requires the dredging of approximately 14.5 miles of channel. For this project, the core borings used to characterize the materials to be dredged come from a number of different time periods and sources. They include the historic core borings that were used in the original deepening of the Harbor in the 1970's, subsequent core borings drilled at various different time periods, and maintenance core borings that were drilled deep enough to be useful. Core boring logs and laboratory gradations/tests from previous dredging events that are useful for classifying the materials to be dredged are appended to the end of Section 01000 GENERAL REQUIREMENTS (refer to Volume 2 of 2 of the specifications). Most of the laboratory gradations are for shoal materials. We have typically excluded core borings that were not drilled deep enough to be useful in evaluating the current deepening. The dredging Contractor should expect to encounter the typical trash and debris normally encountered in working navigation channels.

The historic core borings were often drilled deep enough to penetrate the virgin materials that are to be dredged in the current deepening of the channel. The material shown on the core logs above the depths achieved during previous dredging events will now be shoaling materials; but, the materials shown below the depths achieved by the previous excavation represents disturbed materials and/or virgin materials to be excavated in the current contract. The Contractor should review the after-dredge survey from the previous dredging events when determining the quantity of excavation that will be virgin materials. This information is available at the Jacksonville District Office.

The project can be generally separated into rock and non-rock areas. The principal non-rock area is Cut 3 through Cuts 14-15, Station 44+00.

The materials to be dredged in Cuts 3 through 14-15 are principally fine to medium quartz sands containing variable amounts of shell and shell fragments. Lesser amount of silty sands, clayey sands, silts, clays, and small quantities of rock will be encountered.

The rest of the main channel excavations beyond Cuts 3 through 14-15 will be in predominately rock areas; but include several non-rock reaches.

2.1.1 Non-Rock Area

A non-rock area is a reach of the channel where the virgin materials to be excavated will be predominately non-rock materials as indicated on the core logs included in this contract (refer to Volume 2 of 2 of the specifications). A non-rock area can and typically will contain some rock even if rock is not shown explicatively in core logs. ~~Any areas of rock encountered within a non-rock area shall be dredged to elevation -41 feet required; one additional foot of overdepth dredging will be allowed to elevation -42 feet.~~For proposal purposes, the Offeror should base his/her proposal on there being 5 percent rock in the "Non-Rock Area(s)". Some of the "Non-Rock Area(s)" will have less than 5 percent rock; others will have more than 5 percent rock. Taken as a whole, the proposal should be based on an average of 5 percent rock for the total combined "Non-Rock Area(s)".

2.1.2 Rock Area

A rock area is a reach of the channel where the virgin materials to be excavated will be predominately rock materials as shown on the core logs included in this contract (refer to Volume 2 of 2 of the specifications). A rock area can contain appreciable quantities of sediments. During the original deepening of the harbor, the majority of the rock was excavated using conventional dredging equipment. At a number of locations, blasting was required to aid in the excavation of the rock. The areas that appear to have required blasting are:

Cut 16, Station 0+00 to 5+00, Range 536 to 607
Cut 17, Station 5+00 to 9+00, Range 579 to 607
Cut 18, Station 4+00 to 8+00, Range 529 to 606
Cut 39, Station 24+00 to 27+00, Range 235 to 480
Cut 39, Station 19+00 to 22+00, Range -60 to 240
Cut 39, Station 12+00 to 24+00, Range 430 to 480

(Note: The ranges referenced above are based on the previous Range system where Range 0 was the north edge of the channel and the centerline was generally about Range 250 depending on the cut. The current Range system assigns the centerline as Range 0.)

2.1.3 Blasting Requirements

Blasting will not be allowed in the current deepening project. It is anticipated that all of the required dredging grades can be achieved using conventional dredging equipment without the aid of blasting. The quantity of rock that will require dredging is limited because the original excavation and subsequent maintenance dredging operations often exceeded the required dredging grades. The vast majority of the rock excavated in the original deepening of the channel(s) was excavated using conventional dredging equipment without blasting.

There exists in the area strong massive rock that would ordinarily need to be blasted for economical excavation. In the original deepening of the

channel(s), blasting was required to remove this strong rock; but, after the rock was blasted, the subsequent excavation of the blasted rock typically exceeded the currently required -41 feet. Therefore, while strong rock exists, we do not expect to encounter it in significant quantities when excavating to the currently required -41 feet. That said, the Contractor will encounter some pinnacles and limited areas of ~~resistant~~ strong rock. Since no blasting is allowed in the current contract, the Contractor will have to devise some other method to remove the limited deposits of strong rock that will be encountered.

~~a. Virgin Materials~~
~~b. Disturbed Materials~~
~~c. Shoal Materials~~

2.1.4 Materials to Be Excavated

There are 3 types of materials to be excavated in the deepening of the channel(s):

2.1.4.1 Virgin Materials

Virgin materials are materials that were not dredged or disturbed during the original deepening of the Harbor, subsequent maintenance and/or advance maintenance operations.

2.1.4.2 Disturbed Materials

Disturbed materials are virgin materials that were churned up or broken up during the original deepening or subsequent maintenance dredging events. Examples of disturbed materials are the churned materials left behind after a cutterhead dredge works an area, and the disturbance created by blasting rock areas. In predominately rock areas, the previous excavations will have left a layer of gravely and/or rocky materials that was created by breaking up the rock horizon. The original construction grade elevations were -(38+2) feet in areas classified at that time as being predominately non-rock and -(40+2) feet in areas classified at that time as being predominately rock. The current designation of rock areas and non-rock areas are different than those used during the original deepening of the channel. The reason for these differences is that additional core borings are presently available for evaluation.

Post-dredge as-built surveys indicate that the actual dredging depths achieved during the original deepening excavation often exceeded the required grade (-38 or -40 feet) and 2-foot overdepth allowance.

2.1.4.3 Shoal Materials

Shoal materials are loose and/or soft sediments that have subsequently filled in and covered the disturbed materials and virgin materials.

2.1.5 Shell

There are occasional deposits of shelly sand. See core boring CB-JH-3 (1977) for example (refer to Volume 2 of 2 of the specifications). The strong currents in the channel can concentrate these shell deposits. These shell concentrations typically will not be identified in core boring logs. Occasional significant local deposits of shell will be encountered throughout these Cuts. In a previous maintenance dredging event, significant local concentrations of gravel sized oyster shells were

encountered in Bar Cuts 8 and 9. For proposal purposes, the Offeror shall assume gravel-sized concentrations of large shell deposits large enough to plug his/her pipeline shall occur in less than 1 percent of the project area.

2.1.6 Problem Areas

Contractors have reported problems achieving grade during maintenance dredging events. Core borings CB-JH00-1 through 10 were drilled at specific locations where previous Contractors have reported dredging problems. For borings CB-JH00-1 through 6, 1 core boring was drilled in each discreet area. Each area was about 100 to 300 feet square in size. Borings CB-JH00-7 through 9 were drilled in 1,000-foot reach of the channel where dredging problems have been reported. Refer to Volume 2 of 2 of the specifications.

2.1.7 Rock Areas

In some predominately rock areas in the original deepening of the Harbor, after-dredge surveys indicated that depths achieved during the original deepening were greater than the currently required -41 feet (in rock areas). This means that while core borings clearly indicate the virgin material is predominately rock, the current required grade may have already been achieved and the material to be excavated to -41 feet may be shoal material. (Note: The Contractor should review the after-dredge survey from the previous dredging events when determining the quantity of material from the allowable overdepth which will be virgin materials.)

In addition, in non-rock areas, advanced maintenance dredging has been instituted in several areas where the recent excavation can exceed the original construction grade and overdepth allowance by several feet.

Although the dredging depths specified in the original deepening were documented as being achieved by after-dredge surveys, occasionally, materials may be encountered above the stated grade as pinnacles of virgin materials.

2.1.8 Wharf Areas

Core borings for portions of the Wharf areas to be dredged north of the channel were furnished by the Port Authority:

~~J950- through J950-B10~~
J1934-B2 through J1934-B5
J2269-BA19 through J2269-BA21
J2534-B1 through J2534-B8
J2702C-B1 through J2702C-B201
J5651-BW1 through J5651-BW6

These core borings are provided for informational purposes only. Contractors are cautioned to carefully evaluate these core borings. Please note that these borings used intermittent sampling techniques. Please note that some of the materials are described based on the drill action and the monitoring of the materials in the drill water return. It is very difficult to correctly classify materials using these techniques.

2.1.9 Historical Data

Jacksonville Harbor
Original (1970's) Deepening Specifications

Required	From		To	
Grade	CUT	Station	Cut	Station
38+2 OD	3		14-15	2+00
40+2 OD	14-15	2+00	42	36+00
38+2 OD	42	36+00	50	73+00
40+2 OD	50	73+00	51	40+00
38+2 OD	51	40+00	54	3+00
40+2 OD	54	3+00	Terminal Channel	

The 38-foot grade was used in predominately non-rock areas.
The 40-foot grade was used in predominately rock areas.
OD refers to the dredging overdepth allowance.

Jacksonville Harbor Materials
Calendar Year 2000 Evaluation

Predominant	From		To	
Virgin Materials	CUT	Station	CUT	Station
Sand	3	0+00	14 & 15	44+00
Rock	14 & 15	44+00	19	6+00
Sand	19	6+00	39	11+00
Rock	39	11+00	40	5+00
Sand	40	5+00	40	15+00
Rock	40	15+00	42	17+00
Sand	42	17+00	42	45+00
Rock	42	45+00	42	107+00
Sand	42	107+00	42	135+00
Rock	42	135+00	44	28+00
Sand	44	28+00	45	27+00
Rock	45	27+00	50	37+00

PART 3 EXECUTION

3.1 NOTIFICATION OF COAST GUARD

3.1.1 Navigation Aids

Navigation aids located within or near the areas required to be dredged will be removed, if necessary, by the U.S. Coast Guard in advance of dredging operations. The Contractor shall not remove, change the location of, obstruct, willfully damage, make fast to, or interfere with any aid of navigation.

3.1.2 Dredging Aids

The Contractor shall obtain approval from the U.S. Coast Guard for all buoys, dredging aid markers to be placed in the water, and dredging aid markers affixed with a light prior to the installation. Dredging aid markers and lights shall not be colored or placed in a manner that they will obstruct or be confused with navigation aids.

3.2 WORK AREA

The Contractor will be permitted to exclude the public from the work areas

in the immediate vicinity of his dredging, transporting, and disposal operations. The Contractor shall prevent public access to the discharge end of the pipeline. The Contractor shall erect, maintain, and move as necessary, a restrictive barrier around the discharge of the hydraulic pipeline. The barrier shall be constructed so as to prevent the public from approaching the discharge from any direction closer than 40 feet. The Contractor shall post signs in a conspicuous location with the wording "DANGER - HIGH PRESSURE DISCHARGE FROM DREDGE". Enforcement shall be the Contractor's responsibility at no additional cost to the Government. The enforcement shall be coordinated with local enforcement agencies and will be subject to approval of the Contracting Officer. Additionally, the Contractor shall place a safety person at the discharge end of the disposal pipeline. The safety person shall be present at all times during discharge operations and will maintain radio communication between the dredge and the disposal operation.

3.2.1 Access

The Contractor shall be responsible for providing and maintaining access necessary for his equipment and plant to and from the work site, mooring area, and disposal area. The Contractor shall ascertain the environmental conditions which can affect the access such as climate, winds, currents, waves, depths, shoaling, and scouring tendencies.

3.2.2 Protection of Existing Waterways

The Contractor shall conduct his operations in such a manner that material or other debris are not pushed outside of dredging limits or otherwise deposited in existing side channels, basins, docking areas, or other areas being utilized by vessels. The Contractor will be required to change his method of operations as may be required to comply with the above requirements. Should any bottom material or other debris be pushed into areas described above, as a result of the Contractor's operations, the same must be promptly removed by and at the expense of the Contractor to the satisfaction of the Contracting Officer.

3.2.3 Adjacent Property and Structures

No dredging will be permitted within 25 feet of any structure. Any damage to private or public property or structures resulting from the disposal or dredging operations shall be repaired promptly by the Contractor at his expense. Any damage to structures as a result of Contractor's negligence will result in suspension of dredging and require prompt repair at the Contractor's expense as a prerequisite to the resumption of dredging. Details for dredging adjacent to structures are shown on the contract drawings.

3.2.4 Subaqueous Cable Crossings

The Contractor shall be responsible for verifying the locations and depths of all utility crossings and take precautions against damages which might result from his operations, especially the sinking of dredge spuds and/or anchors into the channel bottom, in the vicinity of utility crossings. If any damage occurs as a result of his operations, the Contractor will be required to suspend dredging until the damage is repaired and approved by the Contracting Officer. Costs of such repairs and down time of the dredge and attendant plant shall be at the Contractor's expense.

3.2.5 Other Contracts

In consonance with Clause OTHER CONTRACTS of Section 00700 CONTRACT CLAUSES, the Contractor shall be aware that there may be other contracts on-going at or near the site of the work under this contract. The Contractor shall fully cooperate with the other contractors and shall carefully adapt scheduling and performing the work under this contract to accommodate the additional work, heeding any direction that may be provided by the Contracting Officer. The Contractor shall not commit or permit any act that will interfere with the performance of work by another contractor. (Refer to paragraph PROJECT COORDINATION of Section 01310 ADMINISTRATIVE PROCEDURES.)

3.3 DISPOSAL OF EXCAVATED MATERIAL

3.3.1 General

Material excavated shall be transported to and deposited in the disposal areas designated on the drawings. The approximate maximum and average distances to which the material will have to be transported are as follows:

Disposal Area	Max. Distance	Avg. Distance
D/A-1 Cell A (W. Bartram Island)	1.5 miles	0.75 miles
D/A-2A (Buck Island	4.0 miles	2.0 miles
Beach Disposal Area A	7.0 miles	3.5 miles
Beach Disposal Area B	9.2 miles	6.4 miles
Beach Disposal Area C	14.2 miles	10.0 miles
Artificial Reef	23.5 miles	19.0 miles

The material to be excavated shall be placed in Upland Disposal Areas, the Artificial Reef, and the Beach disposal area according to the contract drawings.

3.3.2 Artificial Reef

a. The material excavated from the areas indicated on the contract drawings shall be transported to and deposited in the designated Artificial Reef shown on the drawings. The material shall be dumped at the center of the Artificial Reef (X,Y Coordinates: 559,120.51, 2,227,475.00). The plane coordinates are based on Transverse Mercator Projection for Florida, East Zone. The average distance to which the material will have to be transported to the Artificial Reef will be approximately 19 miles and the maximum distance will be approximately 23.5 miles.

b. The use of bottom dump barges or bottom dump dredges and hydraulic unloading barges and hydraulic unloading hopper dredges to dispose of dredged material in the Artificial Reef will be permitted. Water and excavated material shall not be permitted to overflow or spill out of barges, dump scows, or hopper dredges while in route to the disposal site. Failure to repair leaks or change the method of operation which is resulting in overflow or spillage will result in suspension of excavation operations and require prompt repair or change of operation to prevent overflow or spillage as a prerequisite to the resumption of excavation. Material shall be placed in the Artificial Reef below the -40 MLW level.

3.3.3 Placing of Dredged Material in Upland Disposal Areas

3.3.3.1 General

Dredging material shall be placed in the disposal area at a maximum distance from the weirs to insure sufficient settling time so that the effluent will meet the turbidity requirements specified in Section 01411 TURBIDITY AND DISPOSAL MONITORING. The dredged material shall be placed in the disposal areas in such a manner as to not scour out or damage the crown and side slopes of the existing dikes. Damage to dikes or scouring of the crown and side slopes shall be repaired by the Contractor to their original pre-award condition at no additional cost to the Government.

3.3.3.2 Maximum Height of Dredged Material

The Contractor shall not allow water to pond higher than 2.0 feet below the top of dike in either upland disposal area. However, the Contractor may temporarily stack dredged material within the disposal area during the dredging process provided that material is not placed within 20 feet of any dike. Contractor may relocate existing material within either upland disposal area to facilitate disposal operations. Upon completion of dredging if required, degrade and place material within either upland disposal area to elevation 2.0 feet below outer dike crest.

3.3.3.3 Inspection

During placement in the disposal area, the Contractor shall conduct a minimum of two inspections per day of the pipeline, dike and weir discharge. Dredging shall be suspended, if necessary for a period of time required to achieve and maintain water quality standards of the discharge from the disposal area. Dredging shall be immediately suspended in the event of imminent or actual dike failure or pipeline leakage which could or does allow dredged water or material to escape from the disposal area or pipeline. Dredging shall not be resumed until the necessary dike repair or pipeline repairs have been completed. During placement of dredged material in the disposal area, the Contractor will provide constant radio contact between personnel on the dredge and at the disposal area and pipeline. The Contractor's disposal area and pipeline personnel are to quickly notify the dredge should the disposal area discharge exceed water quality standards, the dike fails, or pipeline leakage occurs. The Contractor shall inform the Contracting Officer daily of conditions of any problems associated with the dikes, pipeline, and disposal area discharge. The Contractor shall inform the Contracting Officer at what time the problems were found and time when action was taken to correct the problems. Plant down time to meet the water quality standards or to make dike or pipeline repairs will be at no added cost to the Government or a basis for time extension.

3.3.4 Upland Disposal Area Operation

3.3.4.1 Drainage

a. Drainage of areas adjacent to the diked disposal area shall not be blocked or impaired in any manner by the Contractor's operations. The Contractor shall excavate and maintain ditches necessary to prevent blocking or impairing drainage. The ditches shall be of adequate number and size to eliminate all blockage or impairment of drainage adjacent to the diked disposal area.

b. The Contractor shall, if necessary, excavate and maintain ditches to drain all low areas in the dredged material and disposal area to the weirs. The ditches shall be adequate number and size to eliminate all

ponding of water within the limits of the disposal area.

3.3.4.2 Existing Weirs

a. There are existing weirs in the disposal areas. The Contractor shall provide and install sufficient riser boards to achieve a crest elevation, as necessary, to provide an effluent that will meet the turbidity requirements specified in Section 01355 ENVIRONMENTAL PROTECTION and/or Section 01411 TURBIDITY AND DISPOSAL MONITORING. Disposal area effluent will be controlled by the use of the existing weirs during dredging and pumping operations. The weirs' crest shall be kept at an elevation that provides between two and three feet of ponding at the weirs. The Contractor shall wedge the riser boards in place and seal the joints between the riser boards, as needed, to stop fill material or suspended material from passing through the weirs.

b. Upon completion of disposal operations, all weirs shall be left in place and the Contractor shall adjust the elevations of the crests to provide for complete drainage without ponding of the disposal area for a minimum of 15 days. The elevation adjustment to the weirs shall be the same on all weirs in the disposal area. The weirs' riser boards shall be removed one row at a time. The next row of boards shall not be removed until the water level is drawn down to not more than one inch above the weirs' crest. This process shall be continued until the interface with the suspended dredged material is reached. After the interface is reached, the Contractor shall continue to inspect the disposal area until completion of his/her work under this contract, and he/she shall remove another row of boards each time the material has consolidated sufficiently so that it will not flow from the disposal area. The effluent from this final drainage for eliminating ponding shall meet the applicable requirement specified in Section 01355 ENVIRONMENTAL PROTECTION and/or Section 01411 TURBIDITY AND DISPOSAL MONITORING. The Contractor shall provide at least hourly inspection of the weirs during final drainage of the areas and raise the weir boards if necessary to stop the effluent if it does not meet the applicable requirements. This inspection shall be at closer intervals, if necessary, during periods of rain and when the water level is approaching the interface.

3.3.4.3 Disposal Area 2A (Buck Island)

Upland Disposal Area 2A (Buck Island) is divided into two cells by a cross dike. Dredged material shall be placed in Cell A first.

a. There are a total of eight (8) weirs, four in each Cell, as shown on the drawings. The Contractor shall provide at least two operational weirs and outfall pipes per Cell. Install outfall pipe extensions, a minimum of one 20-foot pipe section, and install temporary pipe supports as required prior to dredging. Each pipe extension requires temporary support to secure pipe and avoid damage imposed by tidal currents and ship wakes. Support structures shall be made of approved materials. Contractor supplied hugger band type couplings with gasket, bolts, and bar and strap connections are required as needed, and shall remain Contractor's property upon completion of project. Touch-up coat of bitumastic is required for each connection of 36 inch diameter CMP riser, and all isolated areas of corrosion on each riser pipe. During the organized, pre-bid disposal site visit, the Contractor shall inspect disposal site to verify CMP placements, pipe conditions and requirements, coupling requirements, and inspect weir and associated

riser boards. If necessary, the Contractor shall provide 20-foot pipe sections needed to extend the outfall pipes.

b. Upon completion of dredging and disposal operations, Contractor shall remove all pipe extensions, clean interiors and place in storage. Support structures shall be removed and stored, as required. The Contracting Officer will designate a storage area at the Preconstruction Meeting.

3.3.4.4 West Bartram Island Disposal Area (D/A-1) Cell A

Upland D/A-1 is divided into 3 Cells by cross dikes. Dredged material shall be placed in Cell A as shown on the drawings. The use of any existing docks on West Bartram Island must be coordinated with the Jacksonville Port Authority and/or their contracting company.

3.3.5 Beach Disposal

Dredged material from Bar Cut-3, Station 210+00 to Cut-9/Cut-10 intersection, shall be placed in Beach Disposal Areas A, B, and/or C as shown on the contract drawings. The dredged material shall be placed to the sections and limits as shown on the drawings to the extent of the dredged material. Passage of equipment, pipeline, etc., shall be seaward of elevation +11.0 feet MLW within the limits of the beach disposal area.

3.3.5.1 Order of Placement

Dredged material shall be placed in the beach disposal area commencing at the northernmost point of the disposal area and proceeding southerly until all dredged material has been placed to the sections and limits shown on the contract drawings.

a. Prior to placement of fill, the Contractor shall remove from the site of the work all snags, driftwood, and similar debris lying within the foundation limits of the beach fill section. All materials removed shall be disposed of in areas provided by and at the expense of the Contractor and approved by the Contracting Officer. Grading and other construction equipment will not be permitted above the +11.0 feet MLW line except for ingress and egress to and from the site.

b. The excavated material shall be placed and brought to rest on the beach to the lines, grade, and cross sections indicated on the drawings, unless otherwise provided for herein or directed by the Contracting Officer. The Contractor shall not stockpile pipe or any other equipment or debris on the beach except as approved by the Contracting Officer. The beach is subject to changes and the elevations on the beach at the time the work is done may vary from the elevations shown on the drawings. The Contracting Officer reserves the right to vary the width or grade of the berm from the lines and grade shown on the plans in order to establish a uniform beach for the entire length of the project. The beach disposal section shown on the drawing is for the purpose of estimating the theoretical amount of fill needed and will be used by the Contracting Officer in making any change in the lines and grade. The Contractor may not be able to achieve the exact disposal area shown on the drawings. He will, however, be required to move the pipeline discharge to another part of the disposal area when he has discharged the amount of dredged materials in an area that would produce that cross section. Earthen pedestrian access ramps shall be provided across the dredge discharge pipeline at 200-foot intervals.

The Contractor shall monitor the dredge and fill operations and shall notify the Contracting Officer if and when the quantity to be dredged appears to be excessive for the designated beach disposal area. The Contractor will not be required to dress the fill below the water line to the slope shown but will be required to do the dressing specified in subparagraph "Dressing" below.

3.3.5.2 Grade Stakes

Grade stakes shall be metal pipes that can be completely removed intact by the Contractor after placement of the fill. Grade stakes shall be of sufficient length to protrude above the final berm elevation and facilitate their extraction.

3.3.5.3 Temporary Longitudinal Dikes

Temporary longitudinal dikes and spreader and/or pocket pipe shall be used to prevent gullying and erosion of the beach and fill and to retain the fill on the beach and within the limits of the fill cross section. As the work progresses, dikes or mounds shall be constructed along the beach to direct the pipeline discharge longitudinally along the beach to avoid transverse gullying directly from the discharge point to the ocean, and to build the new berm to design grade. Longitudinal dikes shall initially be 300 feet long in advance of filling operations. They may need to be lengthened to meet water quality standards, to build to the required lines and grades, and to keep material within the toe-of-fill. The Contractor will not be held responsible for erosion caused by waves after the beach fill has been satisfactorily placed. No undrained pockets shall be left in any fill during or upon completion of the work. The Contractor shall not permit wastewater to flow landward of the fill section or water to pond between the fill and upland. Groins, bulkheads, revetments, seawater pipe structures, and other structures within the fill section shall be protected by the Contractor to prevent damage thereof by the Contractor's operations. Any damages assessed as a result of any of the above items shall be at the Contractor's expense.

3.3.5.4 Rehandled Materials

Any material that is rehandled or moved and placed in its final position by methods other than hydraulic shall be placed in horizontal layers not exceed three (3) feet in thickness. Compaction of the layers will not be required. The Contractor shall schedule his operations to take advantage of tides so that filling is done in the dry or as directed.

3.3.5.5 Dressing

Final dressing shall not take place until all dredging is completed, at which time all evidence of haul road or pipeline shall be removed and the fill shall be graded and dressed so as to eliminate any undrained pockets and abrupt humps and depressions in the beach fill surfaces and as necessary to comply with subparagraph "Tolerances" below. Grade stakes used in the placement of the fill shall be removed intact, without breaking. All dikes shall be completely degraded. The bank caused by wave forces shall be graded down to a slope no steeper than 1 vertical on 20 horizontal.

3.3.5.6 Tolerances

A tolerance of one (1.0) foot above the prescribed berm grade and slopes

above the wave zone will be permitted in the final beach surface.

3.3.5.7 Debris Removal

The Contractor shall clean and remove from the beach disposal area all debris that has been placed on the beach as a result of the disposal operation. The debris will be disposed of in a location provided by the Contractor and accepted by the Contracting Officer.

3.3.5.8 Beach Access

The Contractor shall be responsible for providing and maintaining land access routes necessary for equipment to move to and from the work site. The Contractor shall ascertain all conditions which can affect safe land access such as gates, roadway materials, maneuvering spaces, obstructions, etc. Upon completion of work on beach, the Contractor shall stabilize beach access route. Stabilization shall include filling any ruts or depressions caused by erosion, settlement, or by operation of vehicles or equipment from crest of dike to beach interface, contouring to match existing grade of dike, tilling, and seeding as approved by the Contracting Officer.

3.3.6 Barges

Water and dredged materials shall not be permitted to overflow or spill out of barges or dump scows during transport to the disposal site(s). Failure to repair leaks or change the method of operation which is resulting in overflow or spillage will result in suspension of dredging operations and require prompt repair or change of operation to prevent overflow or spillage as a prerequisite to the resumption of dredging.

3.3.7 Electronic Tracking System (ETS) for Ocean Disposal Vessels

The Contractor shall furnish an ETS for surveillance of the movement and disposition of dredged material during excavation and disposal in the Artificial Reef. This ETS shall be established, operated and maintained by the Contractor to continuously track in real-time the horizontal location and draft condition of the disposal vessel for the entire dredging cycle, including dredging area and disposal area. The ETS shall be capable of displaying and recording in real-time the disposal vessel's draft and location.

3.3.7.1 ETS Standards

The Contractor shall provide automated (computer) system and components to perform in accordance with EM 1110-1-2909. A copy of the EM can be downloaded from the following web site: http://www.usace.army.mil/inet/usace-docs/eng-manuals/em.htm. Horizontal location shall have an accuracy equal to or better than a standard DGPS system, equal to or better than plus/minus 10 feet (horizontal repeatability). Vertical (draft) data shall have an accuracy of plus/minus 0.5 foot. Horizontal location and vertical data shall be collected in sets and each data set shall be referenced in real-time to date and local time (to nearest minute), and shall be referenced to the same state plane coordinate system used for the survey(s) shown in the contract plans. The ETS shall be calibrated, as required, in the presence of the Contracting Officer at the work location before disposal operations have started, and at 30-day intervals while work is in progress. The Contracting Officer shall have access to the ETS in order to observe its operation. Disposal

operations will not commence until the ETS to be used by the Contractor is certified by the Contracting Officer to be operational and within acceptable accuracy. It is the Contractor's responsibility to select a system that will operate properly at the work location. The complete system shall be subject to the Contracting Officer's approval.

3.3.7.2 ETS Data Requirements and Submissions

a. The ETS for each disposal vessel shall be in operation for all dredging and disposal activities and shall record the full round trip for each loading and disposal cycle. (NOTE: A dredging and disposal cycle constitutes the time from commencement of dredging to complete discharge of the material.) The Contracting Officer shall be notified immediately in the event of ETS failure and all dredging operations for the vessel shall cease until the ETS is fully operational. Any delays resulting from ETS failure shall be at the Contractor's expense.

b. All data shall be collected and stored on 3 1/2-inch discs or CD-ROM(s) in ASCII format and shall be readable by MS Windows compatible software. Each dredging and disposal cycle will be a separate and distinct ASCII file, labeled by the trip number. More than one file may be stored on the disc(s) or CD-ROM(s).

c. Data shall be collected, during the dredging and disposal cycle, every 500 feet (at least) during travel to the disposal area, and every minute or every 200 feet, whichever is smaller, while approaching within 1,000 feet and within the disposal area.

d. The required digital data to be collected for each dredging and disposal cycle includes the following:

(1) Trip Number
(2) Data
(3) Time
(4) Vessel ID
(5) Vessel Captain
(6) State Plane X Coordinate - in accordance with subparagraph c. above
(7) State Plane Y Coordinate - in accordance with subparagraph c above
(8) Vessel Draft
(9) Type of Disposal Vessel
(10) Exact State Plane X and Y coordinate at start of dump
(11) Volume of Material Disposed

e. Plot Reporting (2 types):

(1) Tracking Plot - For each disposal event, data collected while the disposal vessel is in the vicinity of the disposal area shall be plotted in chart form, in 200-foot intervals, to show the track and draft of the disposal vessel approaching and traversing the disposal area. Each plot will be attached to the corresponding ASCII data table when submitted. A sample Track and Draft Plot Diagram is appended to the end of this Section.

(2) Scatter Plot - Following completion of all disposal events, a single and separate plot will be prepared to show the exact disposal locations of all dumps. Every plotted location shall coincide with the beginning of the respective dump. Each dump

will be labeled with the corresponding Trip Number and shall be at a small but readable scale. To accompany the Scatter Plot, a single and separate table will be prepared of the corresponding ETS data for every dump location. The volume of material disposed for each trip will be included in this table. A sample Scatter Plot Diagram with Table is appended to the end of this Section.

f. All digital ETS data shall be furnished to the Contracting Officer within 24 hours of collection. The digital plot files should be in an easily readable format such as Adobe Acrobat PDF file, Microstation DGN file, JPEG, BMP, TIFF, or similar. The hard copy of the ETS data and tracking plots shall be both maintained onboard the vessel and submitted to the Contracting Officer on a weekly basis.

3.3.8 Placing of Dredged Material

During placement of dredged material in the disposal areas, the Contractor will be required to provide constant radio contact between the dredge and the disposal areas. This will enable the Contractor's personnel at the disposal areas to immediately notify the dredge in the event of dike or pipeline failure. In the event of dike or pipeline failure, the dredging operations shall be immediately suspended and require prompt repair of the dike or pipeline as a prerequisite to the resumption of dredging.

3.3.9 Dredge Pipelines

3.3.9.1 Dredge Discharge Pipeline

The Contractor shall plainly mark the pipeline access routes with conspicuous stakes, targets and/or buoys to be maintained throughout the contract operations. A tight dredge discharge pipeline shall be maintained to prevent spilling of dredged material or dredge water outside of the disposal area. The Contractor shall provide and maintain radio communication between the dredge and the disposal areas and the dredge and the Contracting Officer. The pipeline shall be inspected at least twice daily for leaks. Failure to immediately repair leaks in the discharge pipeline will result in suspension of dredging operations and require prompt repair of pipeline as a prerequisite to the resumption of dredging. Any damage to private or public property resulting from the Contractor's operations shall be repaired by the Contractor at his expense.

3.3.9.2 Submerged Pipeline

In the event the Contractor elects to submerge his pipeline, the pipeline shall rest on the bottom, and the top of the submerged pipeline and any anchor securing the submerged pipeline shall be no higher than the required depth for the channel in which the submerged pipeline is placed. Should the Contractor elect to use a pipeline material which is buoyant or semi-buoyant, such as PVC pipe or similar low density materials, the Contractor shall securely anchor the pipeline to prevent the pipeline from lifting off the bottom under any conditions. The Contractor shall make daily underwater inspections of the submerged pipeline to ensure buoyancy has not loosened the anchors. The Contractor shall remove all anchors when the submerged pipeline is removed. The location of the entire length of submerged pipeline shall be marked with signs, buoys, lights, and flags conforming to U.S. Coast Guard regulations.

3.3.9.3 Floating Pipeline

Should the Contractor's pipeline not rest on the bottom, it will be considered a floating pipeline and shall be visible on the surface and clearly marked. In no case will the Contractor's pipeline be allowed to fluctuate between the surface and the bottom, or lie partly submerged. Lights shall be installed on the floating pipeline as required in paragraph SIGNAL LIGHTS of Section 00800 SPECIAL CONTRACT REQUIREMENTS. The lights shall be supported either by buoys or by temporary piling, provided by the Contractor and approved by the Contracting Officer. Where the pipeline does not cross a navigable channel, the flashing yellow all-around lights shall be spaced not over 200 feet apart, unless closer spacing is required by U.S. Coast Guard personnel, in which case the requirements of the U.S. Coast Guard shall govern, at no additional cost to the Government.

3.3.10 Booster Pumps

Any booster pumps installed by the Contractor shall be located at least 300 feet from any residential-type building or house. Booster pumps, their prime movers, and any auxiliary equipment shall be fitted or equipped with mufflers, noise control enclosures, or other engineering noise control methods, measures, and features such that steady noise emanating from this equipment does not exceed 85 decibels on the A scale at slow response, and impulsive noise does not exceed 140 decibels. Such items shall be maintained throughout the course of the work.

3.3.11 Misplaced Materials

Materials deposited outside of the disposal areas will be classified as misplaced material and will result in a suspension of dredging operations and require the removal of such materials as a prerequisite to the resumption of dredging. Materials deposited above the maximum indicated elevation or outside of the disposal area template shown will require the degrading or removal of such materials at the Contractor's expense. The Contractor will not be held responsible for erosion caused by waves after the material has been satisfactorily placed. In addition, the Contractor must notify the Contracting Officer and the Environmental Protection Agency within 24 hours of a misplaced dump. Corrective actions must be implemented by the next dump and the Contracting Officer must be informed of actions taken.

3.4 REQUIRED DEPTH, ALLOWABLE OVERDEPTH, AND SIDE SLOPES

3.4.1 Required Depth

The material actually removed from within the specific areas to be dredged to a depth of not more than the required depth shown on the drawings will be estimated and paid for in accordance with the provisions contained in the subparagraphs "Measurement" and "Payment" of Section 01270 MEASUREMENT AND PAYMENT.

3.4.2 Allowable Overdepth

To cover the inaccuracies of the dredging process, material actually removed from the specified areas to be dredged, to a depth below the required depth of not more than the allowable overdepth shown on the drawings, will be measured and paid for in accordance with the provisions contained in the subparagraphs "Measurement" and "Payment" of Section 01270 MEASUREMENT AND PAYMENT.

3.4.3 Side Slopes

Although dredging of side slope material may be necessary to provide the required project channel dimensions (depth and width), the side slopes shown on the drawings are provided for payment purposes only. Side slopes may be formed by box cutting, step cutting, or dredging along the side slope. Material actually removed, within the limits approved by the Contracting Officer, to provide for final side slopes not flatter than that shown on the contract drawings, but not in excess of the amount originally lying above this limiting side slope, will be measured and paid for in accordance with the provisions contained in subparagraphs "Measurement" and "Payment" of Section 01270 MEASUREMENT and PAYMENT. Such amount will be estimated and paid for whether dredged in original position or by box cut dredging whereby a space is dredged below the allowable side slope plane on the bottom of the slope for upslope material capable of falling into the cut. End slopes and transition slopes will not be estimated or paid for under this contract. In such cases, a 0 horizontal on 1 vertical will be used with no upslope allowance provision applied outside the required prism.

3.4.4 Excessive Dredging

Material taken from beyond the limits as described in subparagraphs "Allowable Overdepth" and "Side Slopes" above, will be deducted from the total amount dredged as excessive overdepth dredging, or excessive side slope dredging, for which payment will not be made. Nothing herein shall be construed to prevent payment for the removal of shoals performed in accordance with the applicable provisions of the paragraphs FINAL EXAMINATION AND ACCEPTANCE or SHOALING of this Section.

3.5 SURVEYS

3.5.1 General

The Contracting Officer shall be notified, in writing, 10 days in advance of the need for pre-dredging and after-dredging surveys. Surveys will be performed in accordance with the paragraph QUANTITY SURVEYS of Section 00800 SPECIAL CONTRACT REQUIREMENTS; paragraph LAYOUT OF WORK of Section 01000 GENERAL REQUIREMENTS; Section 01452 DREDGING/BEACH FILL PLACEMENT - CONTRACTOR QUALITY CONTROL; EM 1110-1-1000, EM 1110-1-1002, EM 1110-1-1003, EM 1110-1-1004, EM 1110-1-1005, EM 1110-1-2909, and EM 1110-2-1003; FBPSM; and, TSS. A copy of the EM's can be downloaded from the following web site: http://www.usace.army.mil/inet/usace-docs/eng-manuals/em.htm. A copy of the TSS can be downloaded from the following web site: http://tsc.wes.army.mil.

3.5.2 Contractor Representative

All in-place measurement surveys and final acceptance sweep surveys will be performed with a representative of the Contractor on board the Government platform during the full execution of the survey. No in-place measurement or final acceptance sweep survey will be performed without a representative of the Contractor on board the survey vessel. The Contractor's representative shall be fully knowledgeable in offshore construction subsurface surveying procedures, techniques, equipment, and horizontal and vertical calibration methods, and state-of-the-art horizontal and vertical accuracy limitations. The Contractor's representative shall observe and review, in progress, the adequacy and accuracy of the survey for in-place payment purposes, and for the potential existence of collusion, fraud, or obvious error in the data.

3.5.3 Survey Certification

a. Immediately upon completion of any survey, the Contractor's representative shall, based on his on-site review of the survey execution, determine that the survey contains no evidence of collusion, fraud, obvious error, and that subsequent horizontal and vertical corrections are accurately annotated on the subsurface record.

b. The Contractor's authorized representative shall bring aboard the survey vessel a blank copy of the Certification Statement and shall attest to an acceptable survey by signing the Certification Statement before leaving the vessel. Sample copy of the Certification Statement is appended to the end of this Section.

c. In the event the Contractor's authorized representative observes (and quantifies) specific documentary evidence of either fraud, collusion, or obvious error, the survey will be immediately rerun. Resurveys will totally supersede any previously run survey and will be run over the full reach of any particular Acceptance Section.

d. If acceptability is not acquired after performing one resurvey of an Acceptance Section, a meeting shall be held between the Contractor and the COR to expeditiously resolve the issue causing rejection of the survey. Contractor equipment and personnel standby time to resolve acceptability of the survey shall be at the Contractor's expense.

e. In no case shall a previously unacceptable survey be later judged acceptable by the Contractor; unless such a reassessment/reevaluation is performed within 24 hours after the original survey, and prior to initiating any resurvey action based upon identifiable collusion, fraud, or obvious error.

f. Should the Contractor or his authorized representative refuse to certify to the acceptability of a survey for contract payment without identifiable collusion, fraud, or obvious error, then the following actions will follow:

(1) Preconstruction (pre-dredging) Survey

Excavation shall not commence until representatives of the Contractor and Contracting Officer have met and resolved the basis for refusal of certification. Should the Contractor commence excavation prior to obtaining an acceptable survey, he shall be liable for any excavation performed. If a resurvey is performed, and accepted, prior excavation will not be measured, estimated, or paid for.

(2) Post-construction (after-dredging) Survey

The 3-week survey window allowed under subparagraph "Measurement" of Section 01270 MEASUREMENT AND PAYMENT will be indefinitely extended until a final survey is accepted. Any material accretion which might occur due to such a time extension will neither be measured, estimated, or paid for.

(3) Refusal to Certify

Contractor equipment and personnel standby time to resolve his refusal to certify to the acceptability of a survey when there is

no identifiable collusion, fraud, or obvious error shall be at the Contractor's expense and resultant delays shall not be the basis for time extensions of the contract.

g. Intermediate surveys taken between the pre-dredging and post-dredging surveys will not be considered for the purposes of determining quantities for final payment and acceptance of the area dredged.

3.6 INSPECTION

3.6.1 Quality Assurance Representative (QAR)

The QAR shall be notified prior to the establishment of horizontal control work (baseline layout, ranges, station flags, shore-based control for EPS/RPS, etc.) and vertical control work (tide staff(s), upland cross sections, construction elevations top/invert, maximum/minimum elevations of dredged materials within disposal area(s), etc.), but the presence or absence of the QAR shall not relieve the Contractor of his responsibility for proper execution of the work in accordance with the specifications. The Contractor will be required:

a. To furnish, on the request of the Contracting Officer or any QAR, the use of such boats, boatmen, laborers, and material forming a part of the ordinary and usual equipment and crew of the dredging plant as may be reasonably necessary in inspecting and supervising the work. However, the Contractor will not be required to furnish such facilities for the surveys prescribed in the paragraph FINAL EXAMINATION AND ACCEPTANCE of this Section.

b. To furnish, on the request of the Contracting Officer or any QAR, suitable transportation from all points on shore designated by the Contracting Officer to and from the various pieces of plant, and to and from the disposal areas.

3.6.2 Failure to Comply

In conjunction with the Clause INSPECTION OF CONSTRUCTION of Section 00700 CONTRACT CLAUSES, should the Contractor refuse, neglect, or delay compliance with these requirements, the specific facilities may be furnished and maintained by the Contracting Officer and the cost thereof will be deducted from any amounts due or to become due the Contractor.

3.7 FINAL EXAMINATION AND ACCEPTANCE

3.7.1 Final Examination of Work

As soon as practicable and no later than three (3) weeks after the completion of the entire work or any section thereof (if the work is divided into sections) as in the opinion of the Contracting Officer will not be subject to damage by further operations under the contract, such work will be thoroughly examined at the cost and expense of the Government by sounding or by sweeping, or both, as determined by the Contracting Officer. Should any shoals, lumps, or other lack of contract depth be disclosed by this examination, the Contractor will be required to remove same by dragging the bottom or by dredging at the contract rate of dredging. The Contractor or his authorized representative will be notified when soundings and/or sweepings are to be made and will be permitted to accompany the survey party. When the area is found to be in a satisfactory

condition, it will be accepted finally. Should more than two sounding or sweeping operations by the Government over an area be necessary by reason of work for the removal of shoals disclosed at a prior sounding or sweeping, the cost of such third and any subsequent soundings or sweeping operations will be charged against the Contractor at the rate of $5,500 per day for each day in which the Government plant is engaged in sounding or sweeping and/or is enroute to or from the site or held at or near the said site for such operation.

3.7.2 Final Acceptance

Final acceptance of the whole or a part of the work and the deductions or corrections of deductions made thereon will not be reopened after having once been made, except on evidence of collusion, fraud or obvious error, and the acceptance of a completed section shall not change the time of payment of the retained percentages of the whole or any part of the work.

3.8 SHOALING

If, before the contract is completed, shoaling occurs in any section previously accepted, including shoaling in the finished channel because of the natural lowering of the side slopes, redredging at contract price, within the limits of available funds may be done if agreeable to both the Contractor and the Contracting Officer.

3.9 NOISE CONTROL

All hauling and excavating equipment and dredge/barges, boats, and tugs used on this work shall be equipped with satisfactory mufflers or other noise abatement devices. The Contractor shall conduct his operations so as to comply with all Federal, State, and local laws pertaining to noise. The use of horns and whistle signals shall be held to the minimum necessary in order to ensure as quiet an operation as possible.

a. Sound pressure measurements shall be made with a sound level meter and shall be reported to the Contracting Officer under provisions for the Contractor Quality Control.

b. Sound pressure measurements shall be made a distances to 50 feet, 100 feet, and 500 feet from each major piece of equipment such as draglines, dump trucks, dewatering pumps, pneumatic drills, bulldozers, etc., at locations designated by the Contracting Officer. The measurements shall be made by personnel qualified to make such measurements and whose credentials have been verified by the Contracting Officer. The measurements shall be taken during operations every two weeks. Temperature, atmospheric pressure, and general weather conditions shall be recorded with the measurements.

3.10 DREDGE SAFETY

During dredging operations the Contractor's dredge shall have a current Certificate of Inspection issued by the U.S. Coast Guard.

3.11 PROTECTION OF EXISTING STRUCTURES FROM CONSTRUCTION ACTIVITIES (BEACH DISPOSAL AREAS B AND C)

3.11.1 Protection Program

The Contractor shall implement a protection program that will protect

existing structures from damages that result from construction equipment operations and vibrations. The protection program shall consist of a Pre-Construction Structural Survey, a Vibration Control Plan, a Vibration Control Program, and a Post-Construction Survey.

Existing structures adjacent to the beach fill work area are either residential, commercial, or public properties. Structures are comprised of buildings, patios, slabs, swimming pools, pool decks, bulkheads, seawalls, wooden walkways, etc. The purpose of the program is to avoid damages and potential claims that allege damages were caused by construction activities.

3.11.2 Contractor's Responsibility

The Contractor shall assume all responsibility for damages to existing structures within and bordering the project boundaries that may be attributed to project activities. The Contractor shall also be responsible for any work stoppage that results from monitoring, inspection, damages, damage claims and/or damage avoidance activities.

3.11.3 Pre-Construction Structural Survey

The Contractor shall inspect existing structures within 200 feet from the beach fill limit as to their potential susceptibility to vibration damage from construction equipment induced ground vibration. Visible structural and/or cosmetic damage to buildings, exterior walls, foundations, decks, pools, bulkheads, seawalls, etc., shall be documented by photographs, sketches, and field notes. Copies of all documentation shall be provided to the Contracting Officer before commencement of any work on shore involving heavy equipment capable to produce vibrations.

a. Factors to consider in determining potential susceptibility shall include but not be limited to: foundation design; foundation conditions; soils testing data; changes in structural loads and local water levels due to beach fill placement; structural condition including construction materials, past damage history and existing stresses; magnitude, frequency, and duration of predicted vibrations from construction equipment; and, distance from fill placement.

b. The Contractor shall inspect all existing structures that are determined to be vibration sensitive. Any damage found shall be documented thoroughly by photographs (supplemented with video as necessary), sketches of visible structural and/or cosmetic damage, and field notes. Photographs shall be at least 3-1/2" x 5" and shall provide a detailed visual explanation of the damage. Include a reference scale in each close-up photograph. Sketches shall show the general damage location and extent. All inspection items shall be indexed and cross referenced and shall use the stationing and locations shown on the contract drawings. Include hotel/motel names and addresses where applicable. Structural damage shall be additionally documented by measuring crack or damage size, width, and length. Every effort shall be made to inspect and document the condition of the building's interior where the building has been determined to be extremely susceptible to vibration damage. Structures determined not to be susceptible to vibration damage shall be noted as such.

3.11.4 Vibration Control Program

The Contractor shall use the results of the Pre-Construction Survey to develop the Vibration Control Plan. The Vibration Control Program shall

use the plan to monitor and adjust daily mobilization, demobilization, and fill placement operations, as necessary. The program shall use the appropriate tolerable vibrations to monitor each structure that has been determined to be susceptible to vibration damage. Should ground vibrations equal or exceed the predetermined maximum vibration level(s), construction operations shall be halted and corrective measures taken in accordance with the approved Vibration Control Plan.

a. The minimum safe working distance that vibration producing equipment may operate from each vibration sensitive structure shall be documented in the Vibration Control Plan.

b. The maximum allowable ground vibration level that is permissible without causing threshold damage to each vibration sensitive structure shall be documented in the Vibration Control Plan. Threshold damage is defined as the occurrence of cosmetic damage.

c. Each seismograph shall have the capability to measure peak particle velocity and frequency and shall be equipped with an alarm system to alert the on site Vibration Control Specialist that ground vibrations are approaching the maximum tolerable ground vibration level.

3.11.5 Vibration Control Specialist

The Contractor's personnel responsible for implementation of the Vibration Control Plan is hereafter called Vibration Control Specialist. The Vibration Control Specialist shall be on the site during mobilization, demobilization, and operation of fill placement equipment. The pre-approved alternate may serve in the event of the Vibration Control Specialist's absence. Periods of absence shall not exceed one week at any one time and not more than 15 workdays during a calendar year. The requirements for the alternate are the same as for the designated Vibration Control Specialist.

3.11.6 Post-Construction Structural Survey

After completion of work, the Contractor shall conduct a post-construction inspection of the structures previously inspected under the pre-construction structural survey. Documentation procedures shall be identical to those performed under the pre-construction inspection. Changes or deviations from the pre-construction inspection conditions in any structure shall be identified and described in the inspection documentation. Copies of all documentation shall be provided to the Contracting Officer not later than 15 calendar days after completion of the work on each segment.

3.11.7 Qualifications for Structural Inspection/Evaluation and Vibration Control Program Personnel

The Contractor shall provide personnel for structural inspections and vibration monitoring which meet at least the following minimum qualifications outlined below. The Contractor shall provide documentation verifying the qualifications to the Contracting Officer for approval within 7 calendar days after the date of Notice of Award. The Contracting Officer reserves the right to reject any individual(s) not meeting the qualifications specified and to request resubmittal of other personnel at no cost to the Government.

3.11.7.1 Structural Inspection/Evaluation Personnel

Structural inspections shall be performed by structural engineers registered in the State of Florida with a minimum of 3 years of demonstrated experience in structural condition inspections.

3.11.7.2 Vibration Monitoring Personnel, including Vibration Control Specialist

Personnel responsible for the Vibration Control Program and Plan shall be registered in the State of Florida with a background in geotechnical and structural engineering and shall have a minimum of 3 years of demonstrated experience in vibration monitoring and related work.

3.11.7.3 Approval of New Personnel

The Contractor shall obtain approval of new personnel that replace personnel that were approved as part of any submitted Vibration Control Plan. Approval requests shall include the same requirements as specified for the original personnel.

3.12 DAILY REPORT OF OPERATIONS

See APPENDIX A at the end of this Section (4 pages).

3.13 CERTIFICATION STATEMENT

See APPENDIX B at the end of this Section (1 page).

3.14 DECLARATION OF INSPECTION FOR REFUELING

See APPENDIX C at the end of this Section (3 pages).

3.15 SAMPLE - TRACK AND DRAFT PLOT DIAGRAM

See APPENDIX D at the end of this Section (1 page).

3.16 SAMPLE - SCATTER PLOT DIAGRAM WITH TABLE

See APPENDIX E at the end of this Section (2 pages).

-- End of Section --